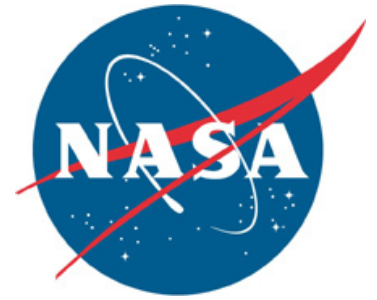


Spaceport News

John F. Kennedy Space Center - America's gateway to the universe

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STS-119 crew arrives for TCDT

By Linda Herridge
Spaceport News

A clear blue sky served as the backdrop as Discovery's STS-119 crew members touched down at Kennedy Space Center's Shuttle Landing Facility aboard T-38 aircraft Jan. 19, for the Terminal Countdown Demonstration Test, or TCDT. A year's worth of training culminated in three days at the center to prepare for their mission to the International Space Station to deliver and install the S6 truss segment and solar arrays.

They were greeted by Launch Director Mike Leinbach and NASA Test Director Pete Nickolenko, and then fielded questions from members of the news media during a brief Q-and-A.

Commander Lee Archambault, Pilot Tony Antonelli, and Mission Specialists Richard Arnold, Joseph Acaba, John Phillips, Steve Swanson and Japan Aerospace Exploration Agency astronaut Koichi Wakata, spent three days at Kennedy



NASA/Kim Shiflett

STS-119 mission crew members head across the tarmac to greet the media after arriving at the Shuttle Landing Facility. From left, is Commander Lee Archambault, Pilot Tony Antonelli, and Mission Specialists Joseph Acaba, Steve Swanson, Richard Arnold, John Phillips and Koichi Wakata. The crew flew to Kennedy Space Center to take part in Terminal Countdown Demonstration Test activities, which include equipment familiarization, emergency exit training, and a simulated launch countdown.

to familiarize themselves with the mission payload, practice emergency egress, and take part in a simulated launch countdown.

Commander Archambault said they've been training for more than a year and are anxious to get going on this mission. He said

adding the final pieces of the station's power supply will allow a full complement of power to operate the Columbus and Japanese labs on the station.

"I'd like to recognize the people at Kennedy," Archambault said. "We do most of our training at

Johnson Space Center and get out here very seldom for official training. This is really the culmination of our training when we get to spend a couple days here."

Archambault said it's a great time to recognize the thousands of people at Kennedy who do so much

for NASA's space program. "It's beautiful to see Discovery on the pad and we know it's the result of many thousands and thousands of man hours," Archambault said.

Wakata said delivery of the S6 truss and solar

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Upcoming challenges bring in the new year

A new year is upon us and the challenges abound! The future holds great things for the Kennedy Space Center, and successfully navigating the turbulent waters that lay ahead of us will be the key to our success.

This is a truly exciting time for human spaceflight. As we look around Kennedy we see the signs of change and new beginnings.

Modifications to Launch Pad 39B are taking shape as the first of three new lightning protection towers has been erected to support the Constellation Program.

In the Vehicle Assembly Building, the upper stage for the Ares I-X test flight is being stacked, and the first stage solid rocket motor segments have arrived and are being processed to support a

Director's Update

Bob Cabana
Kennedy Space Center Director



launch later this year.

The Operations and Checkout Building's high bay has been totally redone and is being dedicated this month to support the assembly and processing of the new Orion spacecraft.

Work is taking place around the center to prepare us to launch and recover the first new U. S. human spacecraft to be developed in more than thirty years. This is history in the making and we're at the center of it.

In addition to the new challenges presented by the Constellation Program, we have five shuttle missions scheduled this year, including four to the International Space Station and the final servicing mission to NASA's Hubble Space Telescope. These missions are essential to complete the ISS, and continue to increase in their difficulty and criticality.

Now, add to this an expendable launch program that's one of the most ag-

gressive in recent years and you can understand why it's so important that we stay focused and continue to meet our commitments in the excellent manner we always have.

Change isn't always easy to deal with. Often times it brings with it uncertainty about the future, which can cause concern.

Administrations, programs and management personnel may come and go, but the one thing that remains constant is Kennedy Space Center is the premier launch facility for America's space program. You have a secure role in the exploration of space that is vital to our future.

Change also brings with it the opportunity to do our jobs even better. One of the areas we're going to look

at early this year is whether we're structured properly to meet our commitments to the programs in the future.

With that in mind, key members of senior staff and project managers at Kennedy will be meeting in the next few weeks to clarify the roles and responsibilities of the programs and the institution, and then determine the best possible organization for Kennedy to effectively utilize our work force.

The future is here; it's at Kennedy now, and we have to deliver. We must continue to provide excellent technical solutions, on time and under budget.

This is going to be a great year and it's a privilege to be a part of this outstanding Kennedy team.

From STS-119, Page 1

arrays is significant. "We're going to the six-member phase of the International Space Station later this year," Wakata said. "I'm ready and looking forward to contributing to this mission."

During the mission, Wakata will transfer to the station and replace NASA astronaut Sandra Magnus as Expedition 18 flight engineer.

Phillips said the crew watched a lot of video from previous solar array installations in order to prepare for the STS-119 mission.

"We take this very seriously," Phillips said. "We all have a role to play in this installation."

Phillips will operate the space station's robotic arm, while Antonelli, Acaba and Wakata operate the space shuttle's robotic arm. Swanson and Arnold will perform three spacewalks, and Acaba will perform two during the mission.

Though the crew's schedule did not permit them to watch the inauguration, Archambault said he would like to encourage the new president to press on with the



NASA/Kim Shiffett

STS-119 Commander Lee Archambault is in the driver's seat of the M-113 armored personnel carrier used for emergency escape, if needed, from Launch Pad 39A. Other crew members behind him are, from left, Mission Specialist Steve Swanson, Pilot Tony Antonelli, and Mission Specialists Joseph Acaba, Richard Arnold, John Phillips and Koichi Wakata, who represents the Japan Aerospace Exploration Agency.

Constellation Program.

"I would at least encourage President Obama to keep the course NASA is going on," Archambault said. "The long-term goal of getting back to the moon and ultimately beyond is really the future

of the program."

On Monday, crew members received an orientation on the M-113 armored vehicle and then practiced driving the vehicle near Launch Pad 39B. Resembling a small tank, the vehicle serves as a means of escape

if the crew needs to exit the space shuttle and ride the slidewire baskets to the ground in an emergency.

Later, Commander Archambault and Pilot Antonelli put on their launch-and-entry suits and practiced landing at the Shuttle Landing Facility aboard the Shuttle Training Aircraft, or STA. The STA is a modified Gulfstream II jet that mimics the space shuttle's gliding profile during landing.

On Tuesday, crew members rode to the pad and participated in an emergency exit walk down and sat in the slidewire baskets at the 195-foot level of the fixed service structure. They also viewed Discovery's payload bay from the payload changeout room.

Just as they will on launch day, the crew suited up in the Operations and Checkout Building, boarded the Astrovan and traveled to Launch Pad 39A to participate in a simulated launch countdown Wednesday morning. In the afternoon they boarded the T-38 jets and returned to NASA's Johnson Space Center in Houston.

Discovery's STS-119 mission is targeted for launch Feb. 12.

First of three Ares lightning protection towers up at Pad 39B

By Linda Herridge
Spaceport News

Looking out over Kennedy Space Center's skyline toward the Atlantic Ocean, the stage is being set around Launch Pad 39B for the next generation of NASA space vehicles.

A 600-foot-tall lightning tower took shape on the east side of the pad as an even taller crane lifted the remaining steel structure and fiberglass mast from the ground nearby and placed it on top of the tower Jan. 4.

"This project is like a reality check, it marks the beginning of the Constellation Program," said Launch Pad Senior Project Manager Jose Perez-Morales.

The tower is the first of three that are part of the new lightning protection system for the Constellation Program's Ares and Orion launches. The contract to complete the work was awarded to Ivey's Construction Inc. on Merritt Island in July 2007 and construction on the foundation for each began in August 2008.

It's taking 900 tons of steel, about 50 NASA and contractor workers, as well as two cranes, a small one and a mammoth one, to complete the work. The small crane rotates tower segments, while a 640-foot-tall Manitowoc Model 2100 crane lifts segments to higher elevations. Workers preassemble sections of the tower on the ground before lifting them into place.

According to Perez-Morales, the initial assembly of all three towers is expected to be complete by April and the entire lightning protection system by

"This project is like a reality check, it marks the beginning of the Constellation Program."

Jose
Perez-Morales,
Launch Pad Senior
Project Manager

March 2010. The pad's fixed service structure and rotating service structure will be demolished in 2010.

"These towers will significantly change the landscape of Pad B, especially when the fixed and rotating service structures are removed from the pad," Perez-Morales said.

A system of catenary wires attached to the mast of each tower will provide the Ares launch vehicles a blanket of protection from lightning strikes, while cameras installed on each tower will record any strikes. For the Ares I-X test flight, currently targeted for July 2009, the catenary wires will be attached from tower 2 to tower 1 to protect the vehicle.

The towers also will house weather stations at four elevations to measure wind speed, wind direction, temperature and humidity. Workers are testing a prototype of the weather station at Kennedy's Engineering Development Lab.

"When all the work is complete, this launch pad will look quite a bit different," Perez-Morales said.



NASA/Kim Shifflett

On Launch Pad 39B, a crane places the 100-foot fiberglass mast atop the new lightning tower. The towers are part of the new lightning protection system for the Constellation Program's Ares and Orion launches. Each of the three new lightning towers will be 500 feet tall with the additional 100-foot fiberglass mast atop supporting a wire catenary system.

Scenes Around Kennedy Space Center



NASA/Jim Grossmann

Nineteen Kennedy Space Center workers were presented with NASA's Silver Snoopy Award for service to space shuttle astronauts. The award was created by the astronauts to honor people who contribute most to the safety and success of human spaceflight.



NASA/Kim Shifflett

A worker inspects the high-gain antenna on NASA's Kepler spacecraft in preparation for testing at the Astrotech payload processing facility in Titusville, Fla. NASA's planet-hunting Kepler mission is scheduled to launch no earlier than March 5 atop a Delta II rocket.



NASA/Jim Grossmann

Johnson Space Center suit techs describe how medics should properly remove an astronaut's suit in case of a medical emergency at the 2009 Kennedy Space Center Spaceflight Medical Support Training Course at the Debus Conference Center inside the the Kennedy Space Center Visitor Complex on Jan. 13.



NASA/Dimitri Gerondidakis

STS-126 crew members chatted with Kennedy workers after the astronauts' presentation Jan. 14 of their experiences during the mission. Pilot Eric Boe signs a picture during the crew return.



Reader-submitted photo

Mike Sumner, left, receives a flown flag from Jim Hattaway, associate director for Business Operations, during Sumner's retirement coffee Dec. 19. Sumner retired after 35 years with NASA.

Spaceport News wants your photos

Send photos of yourself and/or your co-workers in action for possible publication. Photos should include a short caption describing what's going on, with names and job titles, from left to right. Send your photos to:

KSC-Spaceport-News@mail.nasa.gov

Workers demolish Launch Complex 39 Fire Station

Photos by NASA/Tim Jacobs and Jim Grossmann



Getting suited up, a mission in itself

By Anna Heiney
Spaceport News

On launch day, a space shuttle astronaut's first challenge isn't handling the force of liftoff or adjusting to microgravity.

It's getting into the bulky, bright-orange Advanced Crew Escape Suit, or ACES, that provides each crew member a safe cocoon of pressure, breathable air and survival essentials during launch and landing.

Early in the astronauts' launch day activities at Kennedy Space Center, they go to the suit-up room, which is the same room where astronauts have suited for flight since the Apollo missions. Each astronaut climbs into their one-piece suit with the help of several United Space Alliance technicians from the Crew Escape Equipment Group at Johnson Space Center in Houston.

"Work begins days and days in advance," said Insertion Technician Drew Billingsley, who has worked with at least 20 shuttle crews in the past 12 years. He's part of the Crew Escape Equipment Group, which includes six insertion techs and 14 suit techs.

Billingsley reviews

just a few of the preparation milestones: Emergency oxygen bottles are inspected and installed into their harnesses. The suit's liquid cooling system is checked to verify it's not leaking and is functioning properly. There are parachute inspections and suit pressurized leak checks, as well as an "end-to-end" check of the communications systems.

All this advance work sets the stage for a smooth suit-up on launch day.

First, in private, the astronaut puts on long-sleeve, long-pant thermal underwear lined with tubes, through which cooling water flows after the ACES is on. Then the astronaut enters the suit-up room and while sitting in a recliner, steps into the suit feet-first.

"At this point, you dive and then you scrunch," said astronaut Michael Foale, a veteran of four space shuttle missions and long-duration stays on the Russian Mir space station and International Space Station. "You're bending your stomach muscles as much as you can to bend yourself over in two. You put one hand in, then the other hand, and wriggle your arms. This pushes you through the suit



NASA file/1999

In the suit-up room at Kennedy Space Center, Mission Specialist Michael Foale smiles as a suit tech helps him put on his launch-and-entry suit before liftoff on the STS-103 mission.

arms, and gets your head somewhere near the neck ring.

"Now your back is sticking out, covered in blue underwear. Your legs are in the suit, and your arms are in the suit, but the rest of you isn't."

Next, the astronaut ducks his or her head into the suit's metal neck ring, but the last obstacle is actually a neoprene dam that forms a seal around the neck.

"It's designed to be the width of your neck, not your head, so it's very tight as you push your head through it. Your hair gets pulled out as the rubber comes down over your face and squeezes your neck," Foale said.

A suit tech assists each crew member through every step by holding the suit as the astronaut climbs in and ensures a proper fit before zipping the suit closed. Next are boots, which are strong enough to support the feet and ankles in the event of a parachute fall but flexible enough to allow the astronaut to run.

The helmet and gloves are locked into place with connecting metal rings, but are only worn long enough

for suit techs to check the entire ensemble for pressure leaks. Then the helmet and gloves are removed until the astronaut is seated inside the shuttle.

Suit techs pack the astronaut's pockets with survival items such as flares and radios, along with a lanyard to help reach the suit zipper. Crew members also may carry a variety of personal items, such as a pen, pencil, flashlight, glasses, watch, wrist mirror and more.

The carefully choreographed launch countdown allows a 45-minute window for the completion of suit-up and testing. Because any problem that pops up during suit testing can take time to resolve, the process is time-critical.

The flight crew leaves together for the launch pad, riding the elevator from the crew quarters down to the ground level where the silver Astrovan awaits. Inside the van, the astronauts can plug into cooling units at each seat to avoid overheating in their heavy suits. One insertion tech accompanies the crew to the launch pad; another is already there. Both insertion techs are part

of the closeout crew.

When an astronaut reaches the White Room, Billingsley explains, there are several additional tasks to complete. The parachute harness is put on, as is the "snoopy cap," the cap containing the crew member's communications headset. At the same time, the protective booties that covered the astronaut's boots during the trip to the launch pad are removed.

As the astronauts are seated and strapped in, the gloves and helmets are put on once more -- this time, for flight. A round of voice checks confirms each crew member is able to communicate with crewmates, launch controllers at Kennedy and mission controllers in Houston.

Two minutes before liftoff, crew members close and lock their helmet visors for the upcoming journey to orbit. Once in space, crew members remove their gloves and helmets and climb out of their suits, assisted by other astronauts if necessary. They'll also help each other suit up once more as another successful mission draws to a close and the crew and shuttle return home.



NASA/Kim Shiflett

Crew members for space shuttle Endeavour's STS-126 mission depart for Launch Pad 39A aboard NASA's silver Astrovan. The sleeves of their tube-lined thermal suits are visible beneath their orange launch-and-entry suits.

Remembering Our Heritage

SA-5 put America ahead in space race

By Kay Grinter
Reference Librarian

The hustle and bustle at Kennedy Space Center's Launch Pad 39B today to prepare for the Constellation Program is reminiscent of the buzz at Launch Pad 37-B on Cape Canaveral 45 years ago.

The excitement grew Jan. 29, 1964, with the liftoff of SA-5, the first test in NASA's Apollo Program of the Saturn I Block II configuration. SA-5 was the fifth in a series of 10 Saturn flights -- all important to the development of the Saturn IB and Saturn V rockets -- and the maiden launch from Pad 37-B.

With a Jupiter nose cone, SA-5 stood about 164 feet high. It was the first in the Saturn series to generate a full 1 1/2 million pounds of thrust at liftoff, its full rated thrust. If successful, it would be America's mightiest space booster, sending the heaviest payload into orbit at the time.

The Block II series was distinguished by the addition of eight aerodynamic fins to the lower stage for enhanced stability in flight. The most significant feature of Block II, though, was the addition of a live upper stage, the S-IV, built by Douglas Aircraft Co. The S-IV stage introduced liquid hydrogen propellant technology into the Saturn vehicle program.

Six Pratt & Whitney RL-10 liquid hydrogen rocket engines were used in the upper stage to allow orbital operations for the first time for the Saturn I rockets. Above the S-IV stage, the Block II vehicles also carried the first instrument canisters for guidance and control of powered ascent



NASA file

The launch of the SA-5 on Jan. 29, 1964, was the fifth Saturn I launch vehicle. The SA-5 marked a number of firsts, including the first flight of the Saturn I Block II vehicle with eight aerodynamic fins at the bottom of the S-I first stage for enhanced stability in flight. This also was the first flight of a live S-IV upper stage with the cluster of six liquid hydrogen-fueled RL-10 engines, the first successful stage separation, and the first use of Cape Canaveral Air Force Station's Launch Complex 37.

and an array of sensing and evaluation equipment for telemetry acquisition from the ground.

By the end of April 1963, Pad 37-B had been outfitted with a dummy SA-5 vehicle and mechanical support equipment tests completed. There were

a number of routine problems, such as leaking liquid oxygen lines, freezing liquid oxygen vent valves, and inoperative gauges. A modification of the baffles in the S-I stage liquid oxygen tank was the only major change required, but there was time to accomplish this because

the SA-5 launch date had been moved from August to December.

When the 562-ton rocket launched at 11:25 a.m. EST Jan. 29, it remained on the pedestal for a seemingly endless three seconds following ignition, then began its slow, steady

climb skyward.

The Saturn vehicles all carried an invaluable array of visual instrumentation equipment. The Block II series continued the tradition that began during Block I flights with great attention given to on-board television systems.

During the flight, eight on-board motion picture cameras photographed various operations of the rocket and a TV camera provided real-time photographs of separation and ignition of the S-IV stage. The motion picture cameras were ejected about 750 miles downrange.

The largest U.S. Air Force Air Rescue Service aerospace recovery deployment following a rocket launch on the Atlantic Missile Range was directed toward recovering these eight film cassettes.

The members of the Air Force pararescue team were highly trained and skilled in the art of survival, first aid, the use of scuba, and were expert parachutists. Despite adverse weather conditions and rough seas, seven of the eight cassettes were recovered.

The success of SA-5, lofting its almost 40,000-pound payload into orbit, was heralded as placing America one lap ahead of the Soviet Union in the space race.

The mission made the history books for a number of firsts. Not only was it the first flight for the S-IV stage, the first successful stage separation in the Apollo Program, and the first use of guidance and control packages, it also was the first orbital Saturn vehicle, the first Saturn to use uprated engines and the first successful recovery of motion picture camera pods.



Photos by NASA/Jim Grossmann

Discovery makes moves

Above, space shuttle Discovery rolls out of Kennedy Space Center’s Orbiter Processing Facility to head to the Vehicle Assembly Building (background). At right, Discovery, atop the mobile launcher platform and crawler-transporter, approaches the ramp to Launch Pad 39A.



Looking up and ahead

Feb. 4	Launch/VAFB: Delta II, NOAA-N Prime; 5:22 a.m. EST
Target Feb. 12	Launch/KSC: Discovery, STS-119; 7:32 a.m.
Target Feb. 23	Launch/VAFB: Taurus XL, OCO; 4:50 a.m.
Scheduled for March 5	Launch/CCAFS: Delta II, Kepler; 10:48 p.m. EST
March 7	KSC All-American Picnic, KARS Park I
April 24	Launch/CCAFS: Atlas V, LRO/LCROSS; TBD
No earlier than April 28	Launch/CCAFS: Delta IV, GOES-O; TBD
No earlier than May 5	Launch/VAFB: Delta II, STSS-ATRR; TBD
Target May 12	Launch/KSC: Atlantis, STS-125; 1:11 p.m.
Target May 15	Launch/KSC: Endeavour, STS-127; 4:52 p.m.
Target July 11	Launch/KSC: Ares I-X test flight/Launch Pad 39B; TBD
Target Aug. 6	Launch/KSC: Atlantis, STS-128; TBD
No earlier than Oct. 1	Launch/VAFB: Taurus, Glory; TBD
No earlier than Oct. 8	Launch/CCAFS: Atlas V, SDO; TBD
Target Nov. 12	Launch/KSC: Discovery, STS-129; TBD
Target Dec. 10	Launch/KSC: Endeavour, STS-130; TBD
Target Feb. 11, 2010	Launch/KSC: Atlantis, STS-131; TBD
Target April 8, 2010	Launch/KSC: Discovery, STS-132; TBD
Target May 31, 2010	Launch/KSC: Endeavour, STS-133; TBD

WORD ON THE STREET

What aeronautics, science or space exploration goal, or goals, would you like President Barack Obama to focus on?

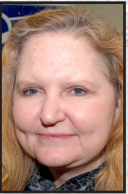


“We should get to the moon and go to Mars. We seem to have lost sight of going beyond.”
Jason Palmer,
with Delaware North Companies Inc.

“To decrease that gap between the shuttle and the Ares programs. It’s most important right now.”
Robin Turner,
with Abacus Technology Corp.



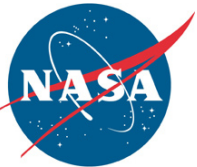
“He should focus on the U.S. preeminence in space and stress exploration goals for the U.S.”
Karen Thompson,
with NASA



“Get the new vehicles flying before we are forced to fly someone else’s crewed spacecraft.”
Larry Geiger,
with ASRC Aerospace Corp.



“Focus on closing the gap of spaceflight. We can’t afford to be without our own crewed spacecraft.”
David Ward,
with NASA



John F. Kennedy Space Center

Spaceport News

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